

than smaller ones. Additionally, selectively removing large limpets leads to a gender imbalance; all are born males that become females as they grow. Both of these circumstances lead to decreased reproduction.

For many people a visit to Cabrillo represents one of the few interactions they will ever have with marine life, and the quality of that experience is related to the condition of the resource. The Cabrillo tidepools are well-known for their quality and are preferred by both locals and visiting tourists over nearby tidepools where harvesting is allowed or limitations are not enforced. Visitation to the park is extremely high; up to 384 visitors have been counted in a single hour.

“The Cabrillo tidepools are well-known for their quality and are preferred by both locals and visiting tourists over nearby tidepools where harvesting is allowed or limitations are not enforced.”

The poaching impacts of visitation are limited by park management strategies, including the presence of education and enforcement volunteers. A Tidepool Protection, Education, and Restoration Program was established whereby volunteers explain the natural components of tidepools, how to enjoy them without harming them, and ongoing research programs.

As a result of research findings, a no-access area was established in 1996 that serves to protect existing populations as a source of organisms to adjacent areas and as an undisturbed control for many studies. Two visitor surveys were conducted by an outdoor recreation policy class at San Diego State University in 1997 and 2001. These indicated strong support (99%) by the public, who “approve of closing part of the tidepools to allow it to recover.”



Giant owl limpet, Cabrillo National Monument

Although Cabrillo National Monument administers only a small part of the southern California coastline, it plays an important role for its wildlife, visitors, and the region. It is an enclave of protection for limpets and many other invertebrates from the rapid pace of urbanization in the region. The offspring of the protected Cabrillo populations will spill over park boundaries through ocean currents to enhance other populations in the region. The park’s approaches and policies help ensure that the tidepools of Cabrillo will continue to provide protection to the resource, increased marine populations in the region, and meaningful visitor experiences for future generations. ■

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Dr. David Cole a pioneer in the field of recreation ecology research



David Cole, a research biologist stationed at the Aldo Leopold Wilderness Research Institute in Missoula, Montana, has received the 2002 Director’s Award for Natural Resources Research. He is employed by the USDA Forest Service but his research in recreation ecology transcends agency boundaries and is particularly important to National Park Service managers because it provides them with a framework for dealing with recre-

ational carrying capacity issues. Dave brings a scientific mindset to the problem of balancing visitor use with minimal damage to the environment and emphasizes the importance of formally defining problems and setting quantifiable objectives. One of his major research efforts is to understand the relationship between amount of use and amount of impact in different ecosystems. His studies indicate that in many situations “relatively low levels of use cause near-maximum impact, so as use increases, impact does not increase very much.” This has major implications, for example, for the appropriateness of campsite policies. Furthermore, he has shown that where low levels of use have caused impact, existing impacts are often extremely slow to recover even if use is greatly reduced.

“His research in recreation ecology transcends agency boundaries.”

Through publications, presentations, and workshops David has assisted wilderness managers in developing policy in light of scientific research. His contribution to the Leave No Trace program was to refine practices by basing them on such research. For example, visitors had been urged not to walk in meadows because meadow was thought to be more fragile than forest. Dave’s research found that although damage to meadows is more unsightly than impacts in the forest, meadows are actually more resistant than forest ecologies.

Dave started out as a geographer. His dissertation was about wilderness vegetation and he decided to focus on the impact of humans on wilderness. He says, “Nobody else had made a career of that subject, so that’s given me lots of opportunities.” ■